APPENDIX I
NOISE AND SOUND LEVELS

The amount by which noise levels may exceed 60 dBA is regulated depending upon the types of equipment and duration of exceedances. Most construction equipment is not permitted to exceed the standards by more than 25 dBA. There are exceptions for impact equipment such as pile drivers which are allowed to reach 99 dBA for short periods. Construction equipment exceedances are permissible in any one hour period between the hours of 8 a.m. and 5 p.m. on weekdays and between 9 a.m. and 10 p.m. on weekends. However, in no circumstance should such equipment exceed the following:

- 90 dBA average, continuously
- 93 dBA average, for 30 minutes
- 96 dBA average, for 15 minutes
- 99 dBA average, for 7.5 minutes

Motor vehicle operation is exempt from noise regulation by Seattle although Federal Highway Administration (FHWA) regulations apply. In conjunction with FHWA, traffic noise is regulated by the Washington State Department of Transportation. For roadway sources, maximum permissible sound levels are measured at a distance of fifty feet from the center of the traffic lane. For vehicles over 10,000 pounds gross vehicle weight (heavy trucks), the noise limit is 86 dBA in areas with a speed limit less than 35 miles per hour (mph) and 90 dBA in areas with a speed limit greater than 35 mph. Noise levels from traffic depend on volume, speed, and number of trucks. Other factors influencing the noise level include steep grades, terrain, vegetation (sound absorption), and other noise barriers such as buildings. Vehicular noise is a combination of noises from the engine, exhaust, and tires.

The FHWA identified noise criteria and established procedures for evaluating projects in the Federal-Aid Highway manual (U.S. Department of Transportation 1982). The FHWA defines a traffic noise impact to have occurred when the traffic noise levels approach or exceed 67 dBA and 72 dBA for residential and commercial areas, respectively, or when predicted traffic noise levels substantially exceed existing levels. An increase of 10 dBA or greater over existing noise levels is considered a substantial impact; an increase of 5 to 10 dBA is considered a minor impact.

The EPA evaluates impact based on the relative change in sound due to a project. It classifies an increase of 0 to 5 dBA as a "slight" impact, an increase of 5 to 10 dBA as a "significant" impact, and an increase over 10 dBA as a "serious" impact.

The affected community's response to noise can be used to consider a noise impact. For instance, a 3 dBA increase in noise will generally not be noticed. However, an increase of 5 to 10 dBA will likely be noticeable. An increase of over 10 dBA will likely be recognized as a substantial increase in ambient sound levels.

Representative Sound Levels

Source	Decibels (dBA)	Effects on Humans
Rocket engine (close range)	180	
Jet takeoff (close range)	150	
Pneumatic riveter	130	
Jet takeoff (197 feet [60 meters])	120	Pain threshold
Subway train	100	
Heavy truck (49 feet [15 meters])	90	Constant exposure may damage hearing
Average factory	80	
Busy traffic	70	Speech interference
Normal conversation (3 feet [1 meter])	60	
Quiet office	50	Sleep interference
Library	40	
Soft whisper (16 feet [5 meters])	30	
Rustling leaves	20	
Normal breathing	10	Barely audible
Hearing threshold	0	

Source: Tipler 1976.